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NUMBER 2, SEPTEMBER 1978

## Maritime Pheromone Trials

The New Brunswick Department of Natural Resources, the Nova Scotia Department of Lands and Forests and the Canadian Forestry Service are currently conducting field trials at St. Quentin, N.B. and near Oxford, N.S. to study the effectiveness of the budworm sex attractant formulated in the Conrel hollow fiber as a means of disrupting mating and oviposition. The Maritimes Forest Research Centre, Fredericton, is serving as the coordinating agency. Scientists from the University of New Brunswick and St. Francis-Xavier University and the New Brunswick Research and Productivity Council are also involved in the program. Costs of the program will be shared by the three governments. A small U.S. observer team from the CANUSA program also participated.

Four 100 ha blocks were treated in New Brunswick in the period 16-22 June approximately 11 days before the first male emerged. The treatments ranged from 2500 fibers/ha in the low application block to 500,000 fibers/ha in the high block. Two aircraft (Cessna 185's) were used in the application. The resident budworm population was low as the result of two applications of spray during the larval period but invasions of egg-carrying females during the first week of July could create evaluation problems.

The New Brunswick treatment was replicated in Nova Scotia from 24 June to 3 July but poor flying conditions cut the application in the high application block to about 250,000 fiber/ha. On average the treatment was applied 8 days before male emergence. Contrary to predictions, populations were moderate to high in the Nova Scotia blocks.

The month of July will be spent in monitoring the effect of the treatments. Methods include the use of light traps, Malaise traps, pheromone-baited sticky traps, caged females with males, and sampling newly laid egg masses by dipping foliage in hot water. The atmospheric monitoring of pheromone in the highest treatments blocks is being conducted by the New Brunswick Research and Productivity Council and St. Francis-Xavier University. Preliminary results of the experiment should be available by the end of September.

## Forest managers can-use-a CANUSA!

Helping out the resource manager is what CANUSA is all about. And at both the Eastern and Western planning workshops last winter, two of these practitioners spoke of their needs and expectations from the CANUSA Spruce Budworms Program. They both indicated they needed help in about every area of pest management: detection, evaluation, prevention, and suppression.

Speaking from Montreal, Kenneth Knauer (State and Private Forestry, Northeastern Area, USDA Forest Service) identified specific expectations:

- techniques for surveying and predicting damage by the spruce budworm,
- assistance in identifying and evaluating forest resource management alternatives for preventing damage,
- improved technology for resource inventory and host condition monitoring,
- criteria for establishing minimum protection requirements, and
- techniques for evaluating short- and long-term protection requirements.

Speaking from Portland, Paul Buffam (Forest Insect and Disease Management, Pacific Northwest Region, USDA Forest Service) pointed out that forest managers need help across the board. He noted that survey procedures for western spruce budworm outbreaks are generally satisfactory but pest managers need stand hazard indices so that stands most conducive to population increases can be closely monitored. To improve biological evaluations, systems are needed to make short- and long-term predictions of budworm population trends and damage.

Benefit/cost analyses are essential in the pest management area, said Buffam. The CANUSA Program can improve the analysis process by helping to determine the effects of budworm-caused damage on individual trees, stands, and related forest resources (e.g. water, esthetics, forage). Better information is needed on the costs and the benefits of specific budworm outbreak prevention and suppression tactics. The economics of various management actions that might be taken against budworms should be evaluated in the context of the different land management situations where they might be applied. Better predictions of short- and long-term environmental risks and benefits of outbreak prevention and suppression strategies are important to management decision-making.

As in the East, western resource managers place greatest priority on strategies for preventing intolerable losses caused by budworms. The CANUSA Program can be most helpful by developing a stand hazard rating system to identify stands most favorable for budworm populations and those most likely to be damaged. This information should lead to silvicultural prescriptions to reduce stand hazards.

In some situations resource managers will need suppression strategies to minimize losses. If the Program supports work on chemical insecticides, the materials developed should be more effective, safer, and less costly than registered materials now available. The continuing need for treatment of high-use, sensitive areas focuses attention on evaluating the potential of *Bacillus thuringiensis* for western spruce budworm control.

Knauer summed up the issue underlying the spruce budworm problem—"There must be market potential for the spruce-fir resource before protection expenditures are justified. Therefore, economic factors will govern the usefulness of outputs from the CANUSA Program."

Forest managers in the United States have high expectations from the CANUSA Spruce Budworms Program. This cooperative program provides an unprecedented opportunity to focus combined resources of both countries on a forest problem of mutual concern.

### **New Studies Underway in the West . . .**

The CANUSA Spruce Budworms Program-West has announced distribution of funds to initiate 26 new studies to be conducted by 32 investigators in 3 Forest Service Experiment Stations and 7 universities (including the University of British Columbia). All awards were made through a competitive process in which proposals were evaluated by a technical review panel. Program Management is continuing negotiations with other investigators to get additional work underway to supplement ongoing studies and projects on the budworm across the West.

### **. . . And Others Will Soon Take Shape in the East**

Dan Schmitt, Eastern Program Manager, will soon solicit research proposals to be funded in Fiscal Year 1979 (October 1978 September 1979). An ad hoc Technical Review Panel has been selected to evaluate all research and project proposals for technical adequacy and to recommend to Program Management that the work be funded, rejected, or funded after revision. A total of 33 experts has been chosen to represent federal, state, and provincial agencies; universities, and private industries across the United States and Canada.

Working Groups are being organized to coordinate the activities of investigators with similar interests as a major step toward accomplishing Program goals. Because we expect interest and participation by investigators on both sides of the international border, there will be two leaders (cochairs)—one American and one Canadian—for most Eastern Component Working Groups.

### **CFS Task Force Convenes**

A Canadian Forestry Service (CFS) Task Force, under the leadership of Dr. Chris Sanders, Great Lakes Forest Research Centre, convened in early July to review current Canadian eastern spruce budworm research. Canadian membership includes Dr. Don Wallace, Great Lakes Forest Research Centre, Dr. Ozzie Morris, Forest Pest Management Institute, Dr. Tony Thomas, Maritimes Forest Research Centre, and Dr. Gord Baskerville, Professor of Forest Ecology, University of New Brunswick. Two Americans, Dr. Lloyd Island, State of Maine, and Dr. Dan Schmitt, Program Manager (East) CANUSA, Broomall, Pennsylvania, complete the team membership. It is hoped the U.S. component will provide the necessary coordination of overlapping portions of the CANUSA and continuing program.

The Task Force has now reviewed ongoing CFS eastern spruce budworm research and related this to the subtargets of the Convergence Analysis Schedule, as the first step in establishing CFS short-term (5 year), medium-term (10 year) and long-term (20 year) priorities on budworm research. Thus, it is evident that considerations beyond the term of the CANUSA agreement are being addressed.

The next phase of the review is to interview the responsible provincial forest managers to ensure that research recommendations conform to management needs. This portion of the review will commence in October and will entail visits to all eastern provincial jurisdictions. The Task Force Team will interview senior management decision makers and attempt to define CFS forestry research priorities in terms of forest management needs.

Following these interviews the Task Force will interview scientists in Regional establishments in order to interpret managerial needs in terms of scientific feasibility. Each major segment of the spruce budworm program will thus be addressed in terms of the needs and objectives of both resource managers and research scientists.

The output of the Task Force, due in February 1979, will be recommendations on the direction of the spruce budworm research program of the Canadian Forestry Service, interpreted in terms of modern requirements, goals and objectives. CFS Establishment Directors have already indicated their support of the Task Force both in terms of composition and in expected results. The interaction of resource manager, research scientist and research manager, it is expected, will form a sound basis for a revitalized and integrated spruce budworm research program.

From the standpoint of the CANUSA agreement, the Canadian side has provided little if any "new money". The ongoing program is the principle Canadian contribution. In order to retain flexibility and to respond to issues of high priority, some reshaping of existing program will be necessary, and the Task Force plans to react as needed.

### **Publications**

#### **CANUSA Style and Design Manual**

This manual presents graphic standards to help achieve consistently high standards of design for CANUSA publications to help improve communications, reduce printing costs, and maintain a consistent identity. The standards are compatible with U.S. Government Printing Office and Department of Agriculture regulations. Participating agencies and institutions should find the manual useful as guidance for publication design and consistent use of the CANUSA logo. Copies are available from the Program Managers and Program leaders.

## **How to Examine Branches for Spruce Budworm Egg Masses**

The first publication to carry the CANUSA logo is a training guide for technicians examining foliage for budworm egg masses, authored by Wayne N. Dixon and Mark W. Housewear of the School of Forest Resources, University of Maine, and Daniel T. Jennings, Northeastern Forest Experiment Station. Copies may be obtained from Dan Schmitt, Program Manager, Canada/U.S. Spruce Budworms Program-East, Northeast Forest Experiment Station, USDA Forest Service, 370 Reed Road, Broomall, Pa. 19008, or from the Cooperative Forestry Research Unit, School of Forest Resources, Room 227, Nutting Hall, University of Maine at Orono, Maine 04473.

## **Insect Growth Regulators for Eastern Spruce Budworm Control**

This report of a workshop held at the Second Eastern Spruce Budworm Research Work Conference, University of Maine at Orono, 12-18 January, 1978, was edited by J. Granett. Ask for Miscellaneous Report Number 198 from Dr. J. Granett, Department of Entomology, University of Maine at Orono, Maine 04473.

## **Efficacy of Orthene® Forest Spray, Dylox® 4 and Sevin® 4 Oil in Controlling Spruce Budworm**

This is a report, issued in June 1978, of a pilot control project in Maine in 1976, by Robert P. Ford. For copies write to USDA Forest Service, State and Private Forestry, Northeastern Area, 370 Reed Road, Broomall, Pa. 19008.

## **Meetings**

### **Aerial Application Technology**

Held in May at the University of Missouri and organized by Dave Grimble, Applications Coordinator-East. The session focused on current R&D work in aerial application technology and needed improvements for budworm control common to both the United States and Canada. Representatives of various "user" groups were present, including Forest Protection Limited, Fredericton, N.B.; Forest Insect and Disease Management, U.S. Forest Service; and investigators from American and Canadian agencies and universities. Problems identified directly from spruce budworms control efforts in Maine, New Brunswick, Quebec, and the western United States were the center of discussion. Several areas of "high priority" research were identified, some of which should receive attention in the 1979 field season.

### **Joint Planning Unit (JPU)**

Will meet August 28-30 in Greenville, Maine, to review plans developed by Program Management for the CANUSA Program in 1979.

### **Joint Policy and Program Council (JPPC)**

Will meet September 26-27 at the Maritimes Forestry Research Centre in Fredericton to review the 1979 plans, consider recommendations from JPU, and discuss policy issues relating to program implementation.

## **Research Coordinators Named**

Dr. Robert Talerico was recently appointed Research Coordinator for the eastern U.S. CANUSA Program. Bob has been project leader of Northeastern Station's Insect Impact Research Work Unit for several years. Bob will be joining the eastern management team in Broomall in early September.

Dr J.J. Colbert has joined the Pacific Northwest Station to fill the Research Coordinator position with the western U.S. CANUSA Program. Jim comes to the U.S. Forest Service from the Department of Statistics at Oregon State University. Jim worked with a team of modelers at Oregon State to develop a stand outbreak model for the USDA Douglas Fir Tussock Moth Program and later helped install the DFTM test management model at the Ft. Collins Computer Center. This model will be used by forest managers to simulate the biological effects and socio-economics impact of outbreaks.

## **Let Us Hear From You**

Good communication is a "must" for the orderly operation of this two-country Spruce Budworms Program. To insure that the NEWSLETTER does its part, we need your help. Additions and corrections to NEWSLETTER mailing lists should be sent to the Program Leaders. We will welcome your comments and questions on the content of CANUSA NEWSLETTERS, and especially your suggestions for future issues.

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